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# Comparative Effectiveness of Various Insecticides and Methods for Controlling Cotton Insects

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BENZENE HEXACHLORIDE.

Benzene hexachloride has been tested against boll weevils in Oklahoma for two years. In 1946 a 5 percent gamma benzene hexachloride dust at 10 lbs. per acre gave approximately the same control as calcium arsenate at 6 lbs. per acre. In 1947 a 5 percent gamma BHC used at the same rate per acre gave outstanding control against boll weevils. No plant injury by this insecticide has been noticed in Oklahoma; however, in certain southeastern states slight leaf burning has been observed.

BHC is not effective against the bollworm and in some cases seems to favor multiplication of this pest.

Peanuts or potatoes should not be planted in fields where cotton was dusted with BHC the previous year. Root crops growing in soil contaminated with BHC are tainted.

BENZENE HEXACHLORIDE—DDT—SULFUR MIXTURE.

A mixture containing 3 percent gamma BHC, 5 percent DDT, and 40 percent sulfur has been especially effective as a cotton insecticide. The BHC controls all pests except the bollworm and red spider. These are killed by the DDT and sulfur. Red spiders may develop in cotton treated with DDT or BHC. Applications should average 10 pounds per acre.

CALCIUM ARSENATE.

Calcium arsenate used at the rate of 6 to 8 pounds per acre is very effective against the boll weevil and leafworm. At this rate, however, it gives poor control of bollworms and often causes a destructive increase in cotton aphids.

CHLORINATED CAMPHENE ("Toxaphene" and other trade names).

Chlorinated camphene was tested last year at 10 and 20 percent strengths at 10 pounds per acre. There was no significant difference between the two so far as boll weevil control was concerned. It does not seem to be as effective as BHC under Oklahoma conditions.

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* Respectively, Extension Entomologist, Oklahoma Agricultural Extension Service; and Entomologist and Head of Department of Entomology, Oklahoma Agricultural Experiment Station. Mr. Stiles summarized reports from other states, and Dr. Fenton summarized recent tests at the Oklahoma Station. The Oklahoma tests were in charge of Dr. C. H. Brett, assisted by W. C. Rhoades.

Tests in other states show that 20 percent at 10 pounds per acre gives best results. This chemical controls boll weevils, bollworms, cotton flea hoppers, leafworms, and several species of plant bugs.

CHLORDANE.

A 10 percent chlordane dust was tested in 1946 in Oklahoma at 10 pounds per acre and gave approximately the same control of boll weevils as calcium arsenate. Leaf injury was observed but was not serious. In 1947 an improved mixture as regards dusting properties was tested in Oklahoma at 5 percent strength at 10 pounds per acre. Poor control of the boll weevil was obtained. Three applications caused leaf injury.

Other states report that a 10 percent mixture gave boll weevil control equal to calcium arsenate, with no plant injury.

CHLORDANE—DDT (3-3 mixture).

A mixture containing 3 percent chlordane and 3 percent DDT has been tested in other states and found to be inferior to calcium arsenate for controlling boll weevils. In some tests this mixture favored cotton aphids and red spiders.

PARATHION (Thiophos or 3422)

Parathion is a relatively new insecticide. It is highly poisonous and has a pungent, disagreeable odor. Tests in Oklahoma have been made with 1 and 2 percent dusts. Results here and in other states indicate that further tests should be made. Concentrations above 2 percent would be very obnoxious and probably dangerous to the operator.

DDT.

DDT controls the bollworm and tarnished plant bug but is ineffective against the boll weevil, leafworm, and cotton aphid, It gives good control of the bollworm at 10 percent strength at 10 to 15 pounds per acre.

NICOTINE.

A 2 percent nicotine in alternate applications of calcium arsenate or a 1 percent nicotine in all applications will prevent a cotton aphid infestation if properly applied.

*SULFUR.*

Present trends show sulfur has an important place as a diluent for insecticides when a non-alkaline filler is needed, such as when mixing BHC and DDT. Its cost is low and it is generally avail-

able. It is also toxic to red spider, so it can be used with some of the newer materials which favor red spider build up. It is inflammable and a sulphur mixture should be kept away from tractor exhausts, sparks, or flames.

### Bug Catching Machines.

Bug catching machines are not recommended. No mechanical device has yet been found by federal or state investigators to be equal to chemicals for controlling cotton insects. Samples of insects collected by one such machine in Oklahoma showed hundreds of beneficial insects caught, and a few boll weevils.

### Spraying versus Dusting.

Dusting is the only method which gives good control of all cotton insects with the materials and equipment now generally available. However, leafworms can be controlled by spraying.

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